COST/BENEFIT ANALYSIS

Integrated Procurement System (Case Study)

U.S. Department of Housing and Urban Development

Month, Year

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	1/31/00	SEO&PMD Cost/Benefit Study
Rev. 1	5/9/00	Cost/Benefit Study Template and Checklist

Cost/Benefit Analysis Authorization Memorandum

I have carefully assessed the Cost/Benefit Analysis for the (System Name). This document has been completed in accordance with the requirements of the HUD System Development Methodology.

MANAGEMENT CERTIFICATION - Please check the appropriate statement.

_____ The document is accepted.

_____ The document is accepted pending the changes noted.

_____ The document is not accepted.

We fully accept the changes as needed improvements and authorize initiation of work to proceed. Based on our authority and judgment, the continued operation of this system is authorized.

_____ _____
NAME DATE
Project Leader

_____ _____
NAME DATE
Operations Division Director

_____ _____
NAME DATE
Program Area/Sponsor Representative

_____ _____
NAME DATE
Program Area/Sponsor Director

COST/BENEFIT ANALYSIS

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1.0 GENERAL INFORMATION

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1.1 Purpose

In response to new Congressional reporting stipulations and amendments to FASA, OFPPA and GPEA requirements, the Office of Procurement and Contracts has instituted modifications designed to streamline its procurement and acquisition process. To better support these changes, the office is proposing to develop and deploy an integrated procurement system to replace its existing procurement system. The features of the existing system have been deemed to be inadequate to support the required process changes while its 5-year old technology platform is, for the most part, obsolete. As such, this cost/benefit analysis has two primary objectives:

1. To determine the "cost savings" impact of the executing the activities associated with developing and implementing a new integrated procurement system in the Office of Procurement and Contracts
2. To understand the comparative tangible cost benefits that can be derived from investing in the proposed system versus alternative solutions.

1.2 Scope

This cost benefit analysis utilizes systems development full-life cost estimates and business assumptions to evaluate cost impact. The costs estimates applied include those incurred from project initiation through installation and deployment. Costs considerations also extend to systems operations for one fiscal year following systems deployment. Therefore, the project activity-based costs applied in this analysis range from A – I of the HUD Systems Development Methodology's (SDM) work breakdown structure (WBS). The benefit values used in this analysis comprise anticipated quantifiable dollar estimates of cost savings that will result from productivity and process improvements if the proposed system is implemented. The alternatives analyzed in this cost assessment are as follows:

- Buy/build system from customized package
- Build a totally new system
- Maintain/Enhance the current system

1.3 System Overview

The Procurement and Contracting Office at Headquarters and the Regional Administrative Offices are responsible for administering the Department's procurement and acquisition process and are the organizations that will share responsibility for the Integrated Procurement System (IPS). IPS will utilize client server architecture to integrate procurement workflow and will be

designed to support web-enabled access. This system is a major application that is designed to support and integrate procurement and acquisition processing activities.

The IPS production environment is described below:

Computing Requirements	Estimated Size	Basis
Personal desktop computer (PC)	CPU: Intel Pentium 133 MHz O/S: Modified MS Windows 95 RAM: 32 MB Local storage: 500 MB	One per User (HUD employee)
Access to SQL Server	500 MB storage	Contractor Team Leader, developers, Procurement System users
Current Procurement System Software access	Icon; 100 bytes storage	Each Procurement System user
LAN Servers	25 MB space on each; 20 MB for application; 5 MB for contingency	Procurement System on production server

1.4 Project References

- Federal Acquisition Streamlining Act (FASA) of 1994
- Office of Federal Procurement Policy Act (OFPPA) of 1988
- Government Paperwork Elimination Act (GPEA) of 1998
- Office of Federal Procurement Policy Act Amendments of 1988 (Public Law 100-679)
- HUD System Development Methodology (SDM)
- The current procurement system's Software Quality Assurance Plan
- The current procurement system's Software Configuration Management Plan
- Procedure for Reviewing Project Commitments to External Individuals or Groups with Senior Management
- Procedure for Developing the Software Development Plan
- Procedure for Estimating the Size of the Project Software Work Products
- Procedure for Assessing the Project Critical Computer Resources
- Procedure for Deriving the Project Schedule
- Procedure for Revising the Software Development Plan
- Procedure for Reviewing External Project Commitments and Changes to Commitments with Senior Management
- Powerscript Coding Standards and Naming Conventions

1.5 Terms and Abbreviations

Acronym/Abbreviation	Definition
CM	Configuration Management
OPC	The Office of Procurement and Contracts.
FAD	Field Accounting Division.
FOIA	Freedom of Information Act.
FPDC	The Federal Procurement Data Center.
FPDS	The Federal Procurement Data System maintained by the FPDC.
FRD	Functional Requirements Document.
GAO	General Accounting Office
Government	U. S. Government or Federal Government unless otherwise indicated.
GSA	General Services Administration
GTM	Government Technical Monitor.
GTR	Government Technical Representative.
IPS	Integrated Procurement System
JFMIP	Joint Financial Management Improvement Program
GUI	Graphical User Interface.
OFPP	Office of Federal Procurement Policy within OMB.
OIG	Office of Inspector General
OIT	Office of Information Technology.
OMB	Office of Management and Budget within the Executive Office of the President.
Program Office	The Office within the Department that initiates and has primary responsibility for, or interest in, a Procurement of property or services.
SQL	Structure Query Language.
QA	Quality Assurance
SDM	System Development Methodology.
RAD	Rapid Application Development.
WBS	Work breakdown structure.

1.6 Points of Contact

1.6.1 Information

The following persons can be contacted with questions pertaining to this document:

- Linda Williams, Project Leader, Office of Procurement and Contracts
- Robert Hawley, Project Leader, Office of Procurement and Contracts
- John Moriani, Configuration Manager, Office of Procurement and Contracts

1.6.2 Coordination

The following organizations must perform the following activities to ensure the successful development and deployment of the new IPS system:

- Office of Procurement and Contracts (OPC) (Headquarters and 25 Field Offices)
- Office of Information Technology (OIT)
- OPC Contractors

Organization	Coordination Activities	Associated Schedule
OPC	Planning, Project Management	03/07/FY00 – 02/28/FY01
OPC, OPC Contractors	Business Requirements Support, Systems Requirements Support	06/10/FY00 – 07/10/FY00
OPC Contractors	Systems Design and Analysis	06/30/FY00 – 08/30/FY00
OIT, OPC, OPC Contractors	Hardware/Software Acquisition and Integration	06/30/FY00 – 08/15/FY00
OPC Contractors	Development, Development Coordination	08/15/FY00 – 12/31/FY01
OIT, OPC Contractors	System Integration and Testing	01/01/FY01 – 02/01/FY01
OPC Contractors, OIT	Installation, Deployment and Training	02/01/FY01 – 02/28/FY01

2.0 MANAGEMENT SUMMARY

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2.1 Assumptions and Constraints

The following table outlines the assumptions and constraints under which the cost/benefits analysis was performed:

Assumptions	Constraints
• Cost of maintaining the existing procurement system will continue to increase to an average of 66% of the total development cost • The rate of inflation for the first 5 years of implementation of the proposed system will not exceed a conservative estimate of 5% • Staffing resources will continue to be available at the existing burn rates over the life of the project • Project introducing new web-enabling technologies will be adequately funded and completed in time to support the web-enabling requirements of the proposed system • Estimated cost savings benefits can be achieved within the first year of deployment	• Funding level for the proposed system may be restricted due to need to fund 2 competing infrastructure projects • Changes in Secretarial priorities of new administration may impact project scope and funding requirements • Learning curve and potential resistance to process adoption in the 25 Field Offices may reduce estimated cost savings that can be derived from anticipated productivity improvements

2.2 Methodology

The cost components used in this cost benefit analysis were estimated labor costs, packaged software acquisition costs and estimated costs of purchasing software development support tools. Labor cost estimates were based on GSA prescribed burn rates for the respective labor categories that will be utilized to develop and implement the proposed system. The labor costs applied combined both contractor hourly burn indirect labor costs for full time equivalents. Labor costs estimates were aggregated by work breakdown structure cost elements for within each high level tasks. High level tasks were categorized according to the workflow defined by the HUD SDM.

The packaged software acquisition cost was based on average of price quotes of similar products obtained from three vendors. The same methodology was applied to estimating prices of required software development tools.

Once cost and cost saving estimates were determined and assuming a useful life of 5 years, the future value of each cost element was extrapolated from FY00 through FY04 by applying an estimated 5% rate of inflation. The present value of the total costs and benefit were subsequently calculated. The cost/benefit of three alternatives, buy/build from packaged software, build new system and maintain/enhance the existing system were evaluated using this approach.

2.3 Evaluation Criteria

The follow table outlines the criteria used for evaluating alternatives and the associated considerations applied.

Evaluation Criteria	Consideration
Organizational Objectives	• Can the proposed solution facilitate organizational compliance within the requisite 2-year timeframe?
Operating efficiency	• Can the proposed solution support a web-based architecture?
Reduced operating costs	• Will implementing the proposed system reduce operating costs to less than 20% of total development costs
Return on Investment	• Will implementing the proposed system provide positive NPV and ROI within 1 year of deployment?

2.4 Recommendations

Based on the application of the above analysis methodology and evaluation criteria considerations, the option to build a new integrated procurement system by customizing an acquired software package met all the considerations listed in the for each evaluation criteria listed above. Therefore, it is recommended that the Office of Procurement and Contracts proceed with this option.

3.0 DESCRIPTION OF ALTERNATIVES

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3.1 Current System

Describe the technical and operational characteristics of the current system (if applicable) by summarizing its functions, identifying the hardware used, and identifying the system's input and output.

The production environment of the current procurement environment is outlined in the table below

Computing Requirements	Estimated Size	Basis
Personal desktop computer (PC)	CPU: Intel Pentium 133 MHz O/S: Modified MS Windows 95 RAM: 32 MB Local storage: 500 MB	One per User (HUD employee)
Access to SQL Server	500 MB storage	Contractor Team Leader, developers, Procurement System users
Current Procurement System Software access	Icon; 100 bytes storage	Each Procurement System user
LAN Servers	25 MB space on each; 20 MB for application; 5 MB for contingency	Procurement System on production server

The current procurement system supports the functions and input/output listed below:

Summary of Current Functions	Summary of Current Input and Output
• Support user interaction in utilizing the Procurement Business Procedures and Procurement workflow • Provide functional access, at logical points of the procurement process workflow (from origination to completion of an Action) • Automate the collection of Procurement life-cycle data into Action workflow stages • Provide processing screens for each Action stage • Provide activity-tracking screens for collecting funding, Vendor, and FPDS data elements. • Provide Action record assignment and	• Dual entry of small purchase transactions • Data input via processing screens for each Action

ownership to a user by system default and routing assignment until the Action is closed or cancelled • Provide a domain structure where Action records reside and distinguish access rights by Customer	

3.2 Proposed System

The production environment of the existing procurement system will be modified to provide the baseline technical and operational environment of the proposed system as illustrated in the following table:

Computing Requirements	Estimated Size	Basis
Personal desktop computer (PC)	CPU: Intel Pentium 133 MHz O/S: Modified MS Windows 95 RAM: 32 MB Local storage: 500 MB	One per User (HUD employee)
Access to SQL Server	500 MB storage	Contractor Team Leader, developers, Procurement System users
Current Procurement System Software access	Icon; 100 bytes storage	Each Procurement System user
Microsoft NT application/database	1 Gig storage	Operating System
LAN Servers	100 MB space on each; 80 MB for application; 20 MB for contingency	Procurement System on production server

In addition the following lists outlines the additional technical and operational requirements that will support the proposed system:

- Disk storage required for storing and retrieving draft and final copies of software and related work products (host and workstation)
- Testing region on the mainframe that "mirrors" the production environment.
- Testing region on the server that "mirrors" the Department's General Ledger and Financial System database environment

- Workstation and host computer processor
- Workstation and host computer memory
- Workstation disk storage
- Sufficient disk and memory allocations
- Development and production server access
- Software licenses
- Software tools
- email software and access
- Communication lines
- Contractor computer hardware and software resources used for development of software applications

3.3 Build New Procurement System

This alternative will utilize a development and production environment that is similar to that described for the proposed system.

4.0 COSTS

4.0 COSTS

4.1 Development Costs

For each alternative system, estimate the cost of the Define, Design, and Build system phases. When determining the overall cost of development, include costs for personnel, equipment, developer training, and development tools.

Alternative 1 —Buy/Build Integrated System from Customize Package (estimated 9-month effort)

Expected Costs	FY01
Project Initiation/Planning	$ 39,890
Requirements Definition	$ 17,840
Systems Design	$ 12,560
Software Acquisition	$ 49,433
Hardware Acquisition	$ 7,540
New Development/Testing	$ 183,900
Systems Integration Testing (IV & V)	$ 39,200
Total Development Costs	**$ 350,363**

Alternative 2 —Build New Integrated Procurement System (estimated 2-year effort)

Expected Costs	FY01	FY02
Project Initiation/Planning	$ 39,890	$ 39,890
Requirements Definition	$ 17,840	$ 17,840
Systems Design	$ 12,560	$ 12,560
Software Acquisition	$ 24,433	$ 0
Hardware Acquisition	$ 7,540	$ 0
New Development/Testing	$183,900	$183,900
Systems Integration Testing (IV & V)	$ 39,200	$ 39,200
Total Development Costs	**$325,363**	**$ 293,390**
Cumulative Development Costs	**$325,363**	**$618,753**

Alternative 3 —Maintain/Enhance Current Procurement System

Expected Costs	FY01	FY02
Project Initiation/Planning	$ 39,890	$ 39,890
Requirements Definition	$ 0	$ 0
Systems Design	$ 0	$ 0
Software Acquisition	$ 0	$ 0

Hardware Acquisition	$ 0	$ 0
New Development/Testing	$ 0	$ 0
Systems Integration Testing (IV & V)	$ 0	$ 0
Total Development Costs	**$ 39,890**	**$ 39,890**

4.2 Operational Costs

Alternative 1 —Buy/Build Integrated System from Customize Package

Expected Costs	FY01	FY02	FY03	FY04	FY05
Project Initiation/Planning	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Installation Deployment and Training	$ 47,110				
Systems Operations		$ 44,750	$ 44,750	$ 44,750	$ 44,750
Total Operating Costs	**$ 87,000**	**$ 84,640**	**$ 84,640**	**$ 84,640**	**$ 84,640**

Alternative 2 —Build New Integrated Procurement System

Expected Costs	FY01	FY02	FY03	FY04	FY05
Project Initiation/Planning	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Installation Deployment and Training	$ 0	$ 47,110			
Systems Operations	$ 0		$ 44,750	$ 44,750	$ 44,750
Total Operating Costs	**$ 39,890**	**$ 87,000**	**$ 84,640**	**$ 84,640**	**$ 84,640**

Alternative 3 —Maintain/Enhance Current Procurement System

Expected Costs	FY01	FY02	FY03	FY04	FY05
Project Planning/Management	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Systems Operations	$ 44,750	$ 44,750	$ 44,750	$ 44,750	$ 44,750
System's Maintenance Corrective/Adaptive	$104,900	$104,900	$104,900	$104,900	$104,900
Total Operating Costs	**$ 189,540**	**$ 189,540**	**$ 189,540**	**$ 189,540**	**$ 189,540**

4.3 Non-Recurring Costs

4.3.1 Capital Investment Costs

Alternative 1 —Buy/Build Integrated System from Customize Package

Expected Costs	FY01	FY02	FY03	FY04	FY05
Requirements Definition	$ 17,840				

Systems Design	$ 12,560				
Software Acquisition	$ 49,433				
Hardware Acquisition	$ 7,540				
New Development/Testing	$183,900				
Systems Integration Testing (IV & V)	$ 39,200				
Installation Deployment and Training	$ 47,110				

Alternative 2 —Build New Integrated Procurement System

Expected Costs	FY01	FY02	FY03	FY04	FY05
Requirements Definition	$ 17,840	$ 17,840			
Systems Design	$ 12,560	$ 12,560			
Software Acquisition	$ 24,433	$ 0			
Hardware Acquisition	$ 7,540	$ 0			
New Development/Testing	$183,900	$ 183,900			
Systems Integration Testing (IV & V)	$ 0	$ 39,,900			
Installation Deployment and Training	$ 0	$ 47,110			

Alternative 3 —Maintain/Enhance Current Procurement System

Non-recurring costs are not applicable for this option.

4.4 Recurring Costs

Alternative 1 —Buy/Build Integrated System from Customize Package

Expected Costs	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**
Project Initiation/Planning	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Systems Operations		$ 44,750	$ 44,750	$ 44,750	$ 44,750

Alternative 2 —Build New Integrated Procurement System

Expected Costs	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**
Project Initiation/Planning	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Systems Operations			$ 44,750	$ 44,750	$ 44,750

Alternative 3 —Maintain/Enhance Current Procurement System

Expected Costs	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**
Project Planning	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Systems Operations	$ 44,750	$ 44,750	$ 44,750	$ 44,750	$ 44,750
System's Maintenance Corrective/Adaptive	$104,900	$104,900	$104,900	$104,900	$104,900

5.0 BENEFITS

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5.1 Non-Recurring Benefits

Non-recurring benefits have not been identified for the proposed system and the alternatives analyzed.

5.2 Recurring Benefits

Cost Avoidance—this is evidenced by the resultant operating cost savings derived with alternative 1 and alternative 2.

Alternative 1 —Buy/Build Integrated System from Customize Package

	FY01	FY02	FY03	FY04	FY05
Total Operating Costs	**$ 87,000**	**$ 84,640**	**$ 84,640**	**$ 84,640**	**$ 84,640**

Alternative 2 —Build New Integrated Procurement System

	FY01	FY02	FY03	FY04	FY05
Total Operating Costs	**$ 39,890**	**$ 87,000**	**$ 84,640**	**$ 84,640**	**$ 84,640**

Alternative 3 —Maintain/Enhance Current Procurement System

	FY01	FY02	FY03	FY04	FY05
Total Operating Costs	**$ 189,540**	**$ 189,540**	**$ 189,540**	**$ 189,540**	**$ 189,540**

Cost Savings

- Derived from eliminating $700,000 annually in processing fees if alternatives 1 or 2 is implemented
- Derived from saving an estimated $325,000 annually in labor expenses if alternatives 1 or 2 is implemented

5.3 Non-Quantifiable Benefits

The following is a list of the non-quantifiable benefits that can be derived from implementing either alternative 1 or 2:

- Program staff nationwide will be able to enter requests for contract services on-line as well as check status of submitted requests and generate reports.

- The Department will be better able to provide timely and accurate reports on Contracting activities to HUD management the Federal Procurement Data Center (FPDC), Office of

Management and Budget within the Executive Office of the President (OMB), Congress, and the public.

- Standardization of business processing for over 5,000 annual HUD purchase order transactions for the entire simplified acquisition business cycle of small purchase requisition, solicitation production, purchase order production, and management reporting

- Dual entry of the small purchase transactions in procurement and financial systems is eliminated by the IPS interface to the Department's central accounting system

6.0 COMPARATIVE COST/BENEFIT SUMMARY

6.0 COMPARATIVE COST/BENEFIT SUMMARY

6.1 Cost of Each Alternative over the System Life

Alternative 1 —Buy/Build Integrated System from Customize Package

Expected Costs	FY01	FY02	FY03	FY04	FY05
Project Initiation/Planning**	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Requirements Definition	$ 17,840				
Systems Design	$ 12,560				
Software Acquisition	$ 7,680				
Hardware Acquisition	$ 7,540				
New Development/Testing	$183,900				
Systems Integration Testing (IV & V)	$ 39,200				
Installation Deployment and Training	$ 47,110				
Systems Operations**		$ 44,750	$ 44,750	$ 44,750	$ 44,750

** *Recurring Costs in constant dollars*

Alternative 2 —Build New Integrated Procurement System

Expected Costs	FY01	FY02	FY03	FY04	FY05
Project Initiation/Planning**	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Requirements Definition	$ 17,840	$ 17,840			
Systems Design	$ 12,560	$ 12,560			
Hardware Acquisition	$ 7,540	$ 7,680			
New Development/Testing	$183,900	$ 7,540			
Systems Integration Testing (IV & V)	$ 39,200	$183,900			
Installation Deployment and Training	$ 47,110	$ 47,110			
Systems Operations**			$ 44,750	$ 44,750	$ 44,750

** *Recurring Costs in constant dollars*

Alternative 3 —Maintain/Enhance Current Procurement System

Expected Costs	FY01	FY02	FY03	FY04	FY05
Project Planning**	$ 39,890	$ 39,890	$ 39,890	$ 39,890	$ 39,890
Systems Operations**	$ 44,750	$ 44,750	$ 44,750	$ 44,750	$ 44,750
System's Maintenance** Corrective/Adaptive	$104,900	$104,900	$104,900	$104,900	$104,900

** *Recurring Costs in constant dollars*

6.1.1 Non-Recurring Costs

Total the non-recurring costs for each alternative:

Buy/Build Customize System	$339,743
Build New System	$629,486
Maintain/Enhance Current System	$0

6.1.2 Recurring Costs

Total the recurring costs for each alternative in current dollars:

Buy/Build Customize System	$90,940
Build New System	$90,940
Maintain/Enhance Current System	$195,840

6.1.3 Total Cost

Total non-recurring and recurring costs subtotal for each year of the system life (adjusted for inflation using a 5% nominal interest rate):

ALTERNATIVE/TOTAL COST PER FY	FY00	FY01	FY02	FY03	FY04
Buy/Build Customize System	$448,563	$95,487	$100,261	$105,274	$110,538
Build New System	$423,563	$423,563	$100,261	$105,274	$110,538
Maintain/Enhance Current System	$195,840	$205,632	$215,913	$226,709	$238,044

6.1.4 and 6.1.5 System Life Costs and Present Value of Costs over System Life

Total cost over system life and net present value of total cost over system life using a 5% discount rate is as follows:

ALTERNATIVES	FY00	FY01	FY02	FY03	FY04	Total Over Cost Over System Life
Buy/Build Customize System	$448,563	$95,487	$100,261	$105,274	$110,538	$ 860,123
Present Value of Alt 1	*$448,563*	*$90,942*	*$90,936*	*$90,894*	*$90,895*	*$ 812,230*
Build New System	$423,563	$423,563	$100,261	$105,274	$110,538	$1,163,199
Present Value of Alt 2	*$423,563*	*$403,401*	*$90,937*	*$90,936*	*$90,940*	*$1,099,777*
Maintain/Enhance Current System	$195,840	$205,632	$215,913	$226,709	$238,044	$1,082,138
Present Value of Alt 3	*$195,840*	*$195,843*	*$195,833*	*$195,831*	*$195,744*	*$979,091*

6.1.6 Residual Value Estimate

This investment is not a capital asset and as such does not provide quantifiable residual value.

6.1.7 Adjusted Cost

The adjusted cost for this investment is **$812,230**

6.2 and 6.3 Benefits

The quantifiable benefits for this investment result from operations and maintenance cost savings that will accrue if maintenance of the current obsolete procurement system is sustained. Maintenance costs comprise labor and other overhead that, based on industry standards, are typically 66% of the original annual development costs for those systems that are in operation for over 5 years and 20 % for those that are in operation for less than 5 years. Based on this assessment, the maintenance cost savings over the next 5 years is estimated to be the 45% cost variance of maintaining the current versus the new system or $206,340.00 in constant dollars annually. This inflation-adjusted value of this estimate is shown in the table below. The annual return this investment was determined by dividing the present value annual benefits by the total adjusted lifecycle cost of $812,230. Beginning in FY01 quantifiable benefits should be derived from this investment as follows:

	FY00	**FY01**	**FY02**	**FY03**	**FY04**	**Total**
Buy/Build Customize System (*Present Value)*	***$448,563***	***$90,942***	***$90,936***	***$90,894***	***$90,895***	***$812,230***
BENEFITS						
Maintenance Cost Saving		**$216,657**	**$227,490**	**$238,864**	**$250,808**	**$933,819**
Automation of High Volume, High dollar transaction[1]		**$735,000**	**$771,750**	**$810,337**	**$850,854**	**$3,167,424**
Automation of High Volume, High Dollar Transaction[2]		**$341,250**	**$358,312**	**$376,228**	**$395,039**	**$1,470,829**
Total Benefits		**$1,292,907**	**$1,357,552**	**$1,425,249**	**$1,496,701**	**$5,572,509**
Present Value of Benefits		***$1,231,364***	***$1,231,299***	***$1,231,124***	***$1,231,335***	***$4,925,122***
Annual Net Present Value		*$419,134*	*$419,069*	*$418,894*	*$419105*	*$1,676,202*
Annual Benefit/Cost Ratio or ROI		**151.6%**	**151.5%**	**151.5%**	**151.6%**	**606.2%**

[1] Adjusted for inflation at 5% nominal interest rate.
[2] Ibid.

6.5 Payback Period

Total benefits exceed total costs beginning in FY01 of implementation and are sustained throughout the first 4 years of this project's useful life. Therefore the Payback Period is 1 year.